CLAIM LISTING

CLAIMS

We claim:

Claims 1-30 : Canceled.

31. (Currently Amended) A method of synthesis of stable isotope labeled internal standard and additional derivatizing reaction in the identification and quantification of alcohol(s) in a sample comprising the steps of:

a) combining a known amount of a[[n]] stable isotope labeled ester internal standard of said alcohol with said sample comprising said alcohol ;

b) contacting said sample with an acid anhydride or an acid chloride to convert said alcohol in said sample into an ester of identical structure as that of said stable isotope labeled ester internal standard except for the stable isotope atoms;

c) extracting said sample to isolate said ester and said stable isotope labeled ester internal standard; and

d) analyzing said ester and said stable isotope labeled ester internal standard by mass spectrometry.

32. (Previously Presented) The method of claim 31 wherein said mass spectrometric method is the isotope dilution mass spectrometric method using isotope labeled internal standard.

33. (Currently Amended) The method of claim 31 wherein said alcohol is an [[alcohol]] organic chemical of molecular mass less than 1000 atomic unit having the following formula R_1OH, R_1CH_2OH, R_1R_2CHOH, $R_1R_2R_3COH$, wherein R_1, R_2, and R_3 are alkyl, aryl, and heteroatom containing cyclic or non-cyclic groups and wherein OH is a hydroxyl group .

34. (Previously Presented) The method of claim 31 wherein said ester internal standard is a stable isotope labeled internal standard.

35. (Previously Presented) The method of claim 31 wherein said ester internal standard is synthesized by reacting an authentic sample of said alcohol with a stable isotope labeled reagent to form said ester internal standard having the following formula R_1OCOR_4 or $R_1CH_2OCOR_4$ or $R_1R_2CHOCOR_4$ or $R_1R_2R_3OCOR_4$ wherein R_4 is a stable isotope labeled alkyl or aryl group.

36. (Previously Presented) The method of claim 35 wherein said labeled group R_4 is selected from a group consisting of CD_3, CD_2CD_3, and C_6D_5, formed by reacting said alcohol with labeled acid anhydride selected from a group comprising labeled acetic acid anhydride, labeled propionic acid anhydride, and labeled benzoic acid anhydride or labeled acid chloride selected from a group comprising labeled acetyl chloride, labeled propionyl chloride, and labeled benzoyl chloride.

37. (Previously Presented) The method of claim 31 wherein said extraction step c) can be any appropriate separating methods such as solid phase extraction, liquid-liquid extraction or solid supported liquid-liquid extraction.

38. (Previously Presented) The method of claim 31 wherein said acid anhydride is selected from a group consisting of acetic acid anhydride, propionic acid anhydride, and benzoic acid anhydride and said acid chloride is selected from a group consisting of acetyl chloride, propionyl chloride, and benzoyl chloride.

39. (Previously Presented) The method of claim 31 wherein said sample contains either a singularity or a plurality of alcohols.

40. (Previously Presented) The method of claim 31 wherein said multiple alcohols can be converted to said esters using either a single acid anhydride or a single acid chloride.

41. (Previously Presented) The method of claim 31 wherein said multiple labeled ester internal standards can be synthesized from said alcohols using either a single labeled acid anhydride or a single labeled acid chloride.

42. (Previously Presented) The method of claim 31 wherein there is no conversion of said stable isotope labeled ester internal standard to its corresponding non-labeled ester compound during step b).

43. (Previously Presented) The method of claim 31 wherein said converting step b) is performed in an aqueous environment.

44. (Previously Presented) The method of claim 31 wherein said converting step b) is performed before said extraction step.

45. (Previously Presented) The method of claim 31 wherein said converting step b) is quantitative.

46. (Previously Presented) A method of identification and quantification of alcohol(s) in a sample comprising the steps of:

a) combining a known amount of a carbamate internal standard with said sample comprising said alcohol ;

b) contacting said sample with an isocyanate to convert said alcohol in said sample into a carbamate of identical structure as that of said carbamate internal standard except for the stable isotope atoms;

c) extracting said sample to isolate said carbamate and said carbamate internal standard; and

d) analyzing said carbamate and said carbamate internal standard by mass spectrometry.

47. (Previously Presented) The method of claim 46 wherein said mass spectrometric method is the isotope dilution mass spectrometric method using isotope labeled internal standard.

48. (Previously Presented) The method of claim 46 wherein said alcohol is an alcohol having the following formula R_1OH, R_1CH_2OH, R_1R_2CHOH, $R_1R_2R_3COH$, wherein R_1, R_2, and R_3 are alkyl, aryl, and heteroatom containing cyclic or non-cyclic groups.

49. (Previously Presented) The method of claim 46 wherein said carbamate internal standard is a stable isotope labeled internal standard.

50. (Previously Presented) The method of claim 46 wherein said carbamate internal standard is synthesized by reacting an authentic sample of said alcohol with a stable isotope labeled reagent to form said carbamate internal standard having the following formula R_1OCONR_4 or $R_1CH_2OCONR_4$ or $R_1R_2CHOCONR_4$ or $R_1R_2R_3COCONR_4$, where R_4 is a stable isotope labeled alkyl or aryl group.

51. (Previously Presented) The method of claim 50 wherein said labeled group R_4 is selected from a group consisting of CD_3, CD_2CD_3 , and C_6D_5 , formed by reacting said alcohol with a labeled isocyanate selected from a group comprising labeled methyl isocyanate, labeled ethyl isocyanate, and labeled phenyl isocyanate.

52. (Previously Presented) The method of claim 46 wherein said extraction step c) can be any appropriate separating methods such as solid phase extraction, liquid-liquid extraction or solid supported liquid-liquid extraction.

53. (Previously Presented) The method of claim 46 wherein said isocyanate is selected from a group consisting of methyl isocyanate, ethyl isocyanate and phenyl isocyanate.

54. (Previously Presented) The method of claim 46 wherein said sample contains either a singularity or a plurality of alcohols.

55. (Previously Presented) The method of claim 46 wherein said multiple alcohols can be converted to said carbamates using a single isocyanate.

56. (Previously Presented) The method of claim 46 wherein said multiple labeled carbamate internal standards can be synthesized from said alcohols using a single labeled isocyanate.

57. (Previously Presented) The method of claim 46 wherein there is no conversion of said stable isotope labeled carbamate internal standard to its corresponding non-labeled carbamate compound during said converting step b).

58. (Previously Presented) The method of claim 46 wherein said converting step b) is performed in an aqueous environment.

59. (Previously Presented) The method of claim 46 wherein said converting step b) is performed before said extraction step.

60. (Previously Presented) The method of claim 46 wherein said converting step b) is quantitative.